CLAIMS

What is claimed is:

1. An apparatus for closing a chamber, the chamber having a first chamber housing and a second chamber housing, comprising:

means for forming a chamber including means for bringing the first chamber housing into contact with the second chamber housing; and

deforming means for preventing formation of particles while the first chamber housing contacts the second chamber housing, wherein the deforming means is mounted on at least one of the first chamber housing and the second chamber housing such that it deforms to accommodate any misalignment while the means for forming a chamber operates.

2. The apparatus of claim 1 wherein the first chamber housing includes a first interior surface defining a first cavity.

3. The apparatus of claim 2 wherein the first interior surface defining a first cavity is sized to contain a semiconductor wafer for forming integrated circuits.

4. The apparatus of claim 2 wherein the second chamber housing includes a second interior surface defining a second cavity.

5. The apparatus of claim 4 wherein the second interior surface defining a second cavity is sized such that when juxtaposed with the first cavity a region thereby formed is sufficiently sized to contain a semiconductor wafer for forming integrated circuits.

6. The apparatus of claim 1 wherein the first chamber housing is mounted to a structure for stabilizing the first chamber housing while the first chamber housing contacts the second chamber housing.

7. The apparatus of claim 6 wherein the second chamber housing is driven by a motivating structure, being constructed and arranged to move the second chamber housing in and out of contact with the first chamber housing.

8. The apparatus of claim 7 wherein the motivating structure is powered by at least one of a pneumatic source, a hydraulic source, a turbine, and a motor.

9. The apparatus of claim 7 wherein the motivating structure comprises:

a body defining a casing; and

a moveable member, being positioned in the casing and being reciprocable along an axis between a first position and a second position, wherein the second chamber housing contacts the first chamber housing while the moveable member is in the first position, and wherein the second chamber housing is not in contact with the first chamber housing while the moveable member is in the second position.

10. The apparatus of claim 9 wherein the deforming means comprises at least one of a material between a surface of the first chamber housing and a surface of the structure to which the first chamber housing is mounted, a material between a surface of the second chamber housing and a surface of the motivating structure, and a material between a surface of the moveable member and a surface of the casing.

11. The apparatus of claim 10 wherein the material comprises an abrasion resistant material characterized by high impact strength and having a low coefficient of friction.

12. The apparatus of claim 10 wherein the material comprises at least one of polyether ether ketone (PEEK™), thermoplastic resin, polyolefin type resin, polyamide resin, polyester resin, polyether resin, polynitrile resin, polymethacrylate resin, polyvinyl resin, cellulose resin, fluorine resin and a composition of PEEK™ and at least one of resins and fillers.

13. The apparatus of claim 1 further comprising alignment means for reducing an amplitude of relative motion between the first chamber housing and the second chamber housing while the first chamber housing contacts the second chamber housing.

14. The apparatus of claim 13 wherein the alignment means comprises a first chamber housing feature adapted to engage with a second chamber housing feature to particularly position the second chamber while the first chamber housing contacts the second chamber housing.

15. The apparatus of claim 14 wherein at least one of the first chamber housing feature and the second chamber housing feature comprises a protrudance, wherein the protrudance has a particularly shaped outer edge adapted to interfit with a recess defined in at least one of the first chamber housing and the second chamber housing.

16. The apparatus of claim 13 wherein the alignment means comprises a pin-like structure located on at least one of the first chamber housing and the second chamber housing and an aperture defined in at least one of the first chamber housing and the second chamber housing to securely receive the pin-like structure.

17. The apparatus of claim 16 wherein the aperture is elongated in shape and has at least one chamfered inner wall adapted to facilitate alignment of the aperture with the pin-like structure.

18. The apparatus of claim 1 wherein at least one of the first chamber housing and the second chamber housing comprises a manifold having thereon a plurality of fluid outlets for distributing a process fluid.

19. The apparatus of claim 1 further comprising means for performing a supercritical process.

20. The apparatus of claim 19 wherein the means for performing a supercritical process comprises means for circulating at least one of gaseous, liquid, supercritical and near-supercritical carbon dioxide in the chamber.

21. A method of closing a chamber, the chamber having a first chamber housing and a second chamber housing, comprising the steps of:
    a. forming a chamber including bringing the first chamber housing into contact with the second chamber housing; and
    b. preventing formation of particles while the first chamber housing contacts the second chamber housing.

22. The method of claim 21 wherein the step of forming a chamber comprises moving the second chamber housing in and out of contact with the first chamber housing.

23. The method of claim 21 wherein the step of preventing formation of particles comprises positioning a material on at least one of the first chamber housing and the second chamber housing such that the material deforms to accommodate any misalignment while forming a chamber.

24. The method of claim 23 wherein the material comprises an abrasion resistant material characterized by high impact strength and having a low coefficient of friction.

25. The method of claim 23 wherein the material comprises at least one of polyether ether ketone (PEEK™), thermoplastic resin, polyolefin type resin, polyamide resin, polyester resin, polyether resin, polynitrile resin, polymethacrylate resin, polyvinyl resin, cellulose resin, fluorine resin and a composition of PEEK™ and at least one of resins and fillers.

26. The method of claim 21 wherein the step of preventing formation of particles comprises configuring an alignment means for reducing an amplitude of relative motion between the first chamber housing and the second chamber housing while the first chamber housing contacts the second chamber housing.

27. The method of claim 26 wherein the step of employing an alignment means comprises configuring a first-chamber-housing feature to engage with a second-chamber-housing feature to particularly position the second chamber while the first chamber housing contacts the second chamber housing.

28. The method of claim 21 further comprising processing an object with a fluid.

29. The method of claim 28 wherein the step of processing an object with a fluid comprises processing a semiconductor wafer with at least one of gaseous, liquid, supercritical and near-supercritical carbon dioxide.

30. A method of eliminating particle generation at a platen/injection ring interface, comprising the steps of:

a. forming a platen/injection ring interface including bringing a platen into contact with an injection ring; and

b. positioning a material on at least one of the injection ring and the platen such that the material deforms to accommodate any misalignment while forming the platen/injection ring interface.

31. A method of 30 further comprising the step of configuring an alignment means for reducing an amplitude of relative motion between the platen and the injection ring while the platen contacts the injection ring.

32. The method of claim 30 further comprising the step of processing a semiconductor wafer with at least one of gaseous, liquid, supercritical and near-supercritical carbon dioxide.